

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of)	
)	
Promoting Interoperability in the 700 MHz Commercial Spectrum)	WT Docket No. 12-69
)	
)	
Interoperability of Mobile User Equipment Across Paired Commercial Spectrum Blocks in the 700 MHz Band)	RM-11592
)	

**COMMENTS OF CONSUMERS UNION,
PUBLIC KNOWLEDGE, NEW AMERICA FOUNDATION AND FREE PRESS**

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SUMMARY

In this *Notice of Proposed Rulemaking*, the Commission seeks to promote interoperability in the lower 700 MHz band. The Commission must act swiftly to require interoperability and compliance with that mandate. Quick action by the Commission will ensure that a competitive market can evolve and provide consumers with more choices for wireless services and devices. However, although the Commission is currently focused solely on the lower 700 MHz band, Public Interest Commenters urge the Commission to continue to consider interoperability across the entire 700 MHz band.

Interoperability will allow consumers to more easily switch carriers. Moreover, interoperability within LTE networks is critical to ensure that roaming is technically possible. Additionally, interoperability could benefit smaller, competitive wireless carriers by enabling them to provide the newest and most sought after devices on their networks. Interoperability also is critical to an effective and efficient public safety network.

Some have argued that interoperability will hamper device design. However, evidence suggests that interoperability will not affect the ability of manufacturers to develop viable handsets for the lower 700 MHz band. Moreover, interoperability would allow more easily for manufacturers to take advantage of economies of scale and could lower prices for consumers.

The Commission must act now to protect the public interest. It should no longer wait for industry efforts to deliver interoperability to consumers. Thus, the Commission must now use its ample legal authority to mandate interoperability and compliance.

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Consumers Union, Public Knowledge, New America Foundation, and Free Press (“Public Interest Commenters”) respectfully submit these Comments in response to the Commission’s Notice of Proposed Rulemaking, *In the Matter of Promoting Interoperability in the 700 MHz Commercial Spectrum*.¹ The *NPRM* seeks to promote interoperability in the Lower 700 MHz band (“Lower Band”). Although the Commission is currently focused solely on the Lower Band, Public Interest Commenters urge the Commission to mandate interoperability therein and also to continue to monitor the feasibility of interoperability across the entire 700 MHz band.

I. INTRODUCTION

The Commission has long recognized that interoperability promotes competition among carriers and more choice for consumers. The Commission itself first set the precedent to require

¹ See WT Docket No. 12-69, FCC 12-31 (March 21, 2012) (“*NPRM*”).

band-wide interoperability when it first licensed spectrum for cellular service in the 1980s.² Since then, the Commission has taken the necessary steps to promote interoperability for different band allocations.³ As a result, the Cellular, PCS, and AWS bands are interoperable.⁴ To continue to ensure competitive and consumer benefits, the Commission should follow its own precedent and swiftly require interoperability in the Lower Band.

Interoperability would allow consumers to more easily switch carriers. Indeed, according to a survey conducted by *Consumer Reports*®, consumers have a strong desire to keep their existing handsets when moving from one carrier to another. Moreover, interoperability within LTE networks is critical to ensure that roaming is technically possible. Additionally, interoperability could benefit smaller, competitive wireless carriers by enabling them to provide the newest and most sought after devices on their networks. Interoperability also is critical to realizing an effective and efficient public safety network.

The Commission's initial focus on the Lower Band is appropriate since there is a more developed record and additional technical issues may have to be resolved for interoperability in the entire 700 MHz band. However, this initial consideration should not preclude full interoperability in the 700 MHz band, which is especially significant for public safety. Thus, the Commission must act swiftly to require interoperable networks and not rely solely on voluntary

² See *Cellular Communications Systems*, 86 FCC 2d, 469, 482 (1981) (“With respect to mobile stations, all units must be capable of operating at least over the entire 40 MHz of spectrum (i.e., 666 channels). This is necessary in order to insure full coverage in all markets and capability on a nationwide basis.”).

³ See Amendment of the Commission's Rules to Establish New Personal Communications Services, *Memorandum Opinion and Order*, 9 FCC Rcd 4957, ¶¶ 163-64 (1994) (“[A]vailability of interoperability standards will deliver important benefits to consumers and help achieve our objectives of universality, competitive delivery of PCS, that includes the ability of consumers to switch between PCS systems at low cost, and competitive markets for PCS equipment.”).

⁴ Although the Cellular, PCS, and AWS bands each are interoperable, differences in technological standards used by different carriers limit full interoperability.

industry efforts. Commission action in this regard will ensure that a competitive market can evolve and provide consumers with more choices for wireless services and devices.

II. INTEROPERABILITY WILL PROMOTE COMPETITION AND BENEFIT CONSUMERS

More and more, consumers rely on mobile communication and mobile broadband. Thus it is critical that consumers have a truly competitive marketplace, which leads to lower prices and more choices. However, in its *Fourteenth Wireless Competition Report*, the Commission could not find that the wireless market was subject to “effective competition.”⁵ In its most recent *Fifteenth Wireless Competition Report*, the Commission again failed to find that the market was effectively competitive.⁶

There are a number of factors that can determine whether a competitive market exists. Some of those factors which the Commission analyzed in both reports include switching costs, “non-price rivalry” indicators such as roaming, and barriers to entry. As the wireless market moves towards adopting LTE technology, interoperability is critical to minimizing switching costs, ensuring that consumers can roam onto other carriers’ networks, and creating a market that promotes competition among carriers by eliminating unreasonable barriers. And as discussed in Part II below, in addition to consumer benefits that would result from increased competition, interoperability in the entire 700 MHz band would also benefit public safety.

⁵ See Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services, *Fourteenth Report*, 25 FCC Rcd 11407 ¶ 3 (2010) (“*Fourteenth Wireless Competition Report*”).

⁶ See Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services, *Fifteenth Report*, 26 FCC Rcd 9664 ¶ 2 (2011) (“*Fifteenth Wireless Competition Report*”).

A. Interoperability Will Promote Consumer Choice.

The Commission has acknowledged the existence of switching costs as a barrier to competition. “In the context of mobile wireless services, consumer switching costs are costs that a consumer incurs when past investment specific to her current service provider must be duplicated for a new service provider.”⁷ Switching costs can effectively limit consumer choice since it can deter a consumer from switching providers.

The Commission has recognized that replacing a handset when switching providers is an economic switching cost for consumers.⁸ This is especially the case in the current wireless market which utilizes different technology standards across different frequencies. Currently, three major standards exist – GSM, CDMA, and iDEN – which makes full interoperability of devices across networks extremely difficult to the extent that devices are based on incompatible technical standards.

To further complicate consumer choice, devices are built for specific spectrum bands, so even if the same technology is employed by different carriers, large frequency band separations can also prevent full interoperability.⁹ Yet, as mobile communications become more integral to consumers’ lives, consumers should be free to switch providers and feel confident their devices will work, regardless of the carrier or network.

Technological barriers no longer have to result in expensive switching costs and limited choices for consumers. The wireless industry is moving towards a common technology, LTE, within the 700 MHz band, as well as chipsets that affordably accommodate a larger number of

⁷ *Fourteenth Wireless Competition Report* at ¶ 229. See also, *Fifteenth Wireless Competition Report* at ¶ 239.

⁸ See *Fifteenth Wireless Competition Report* at ¶¶ 254-257. See also, *Fourteenth Wireless Competition Report* at ¶¶ 239-241.

⁹ Tolu Odumosu and Venkatesh Narayanamurti, *Toward a Common Wireless Market*, Issues in Science and Technology (2012) at http://www.issues.org/28.2/p_odumosu.html.

bands in consumer devices. Use of the common technology and advances in chipsets should benefit consumers since they can allow ease of interoperability and make it easier for consumers to switch carriers and take their phones with them. Yet, as the LTE standard has begun to develop, there is the risk of balkanization of the LTE standard since Verizon Wireless and AT&T have adopted band class standards that would only allow devices to work within their spectrum holdings.¹⁰

For example, with respect to the Lower Band, AT&T holds licenses in the lower 700 MHz B and C blocks, which constitute Band Class 17 according to standards developed by the 3rd Generation Partnership Project (“3GPP”).¹¹ However, Band Class 17 is a smaller subset of Band Class 12, which includes the Lower A, B, and C Blocks and spectrum licensed to smaller, rural licensees. By creating the separate Band Class 17, AT&T is able use its control of Band Class 17 – and its dominance in the market – to require manufacturers to build devices that work only on Band Class 17 and not on Band Class 12.¹² Consequently, without interoperability within the Lower Band, competition will be undermined because of added switching costs, which would ultimately harm consumers by reducing consumer choice.

Indeed, the Commission has noted that

[i]f enough consumers have the ability and propensity to switch service providers in response to a change in price or non-price factors, then mobile wireless service providers will have an

¹⁰ See, e.g., Martyn Roetter, D.Phil., Alan Pearce, Ph.D., and Barry Goodstadt, Ph.D., *Non-Interoperability at 700 MHz: Lower Revenues and Higher Prices*, Information Age Economics at 1 (November 2011) (“Information Age Economics Paper”) at <https://rca-usa.org/wp-content/uploads/2011/11/RCA-700MHz-Interoperability-FNL.pdf>; Peter Cramton, *700 MHz Device Flexibility Promotes Competition* (August 9, 2010) (“Cramton Paper”) at <http://www.cramton.umd.edu/papers2010-2014/cramton-700-mhz-device-flexibility-promotes-competition.pdf>.

¹¹ See *NPRM* at ¶ 10.

¹² Indeed, as the *NPRM* notes, the licensees of Band 12 have alleged facing difficulties in obtaining attractive devices at reasonable costs. See *NPRM* at ¶¶ 11-13.

incentive to compete vigorously to gain customers and retain their current customers. Consumers will be more effective in constraining wireless service provider behavior when the transaction costs they incur in choosing and switching providers are low.¹³

Thus, as LTE networks develop, it is critical to continue to ensure that the benefits of interoperability will be made available to consumers, rather than prolonging the current trend of locking handsets to specific providers.

Not only is interoperability feasible, consumers recognize and demand it. According to a nationwide poll conducted at Consumers Union, virtually all respondents (97%) felt that consumers should be able to keep their existing handsets when changing carriers.¹⁴ An overwhelming majority (88%) said that their handset should work on any cellular network.¹⁵ Importantly, 73% said they would strongly support or support a government rule that requires handsets to be compatible with all U.S. cellular services.¹⁶

B. Interoperability Will Promote Roaming.

Another key element to promoting competition is “the conduct of mobile wireless services providers—in particular, whether they engage in ... non-price rivalr[ous]” actions such as roaming.¹⁷ “Roaming arrangements between commercial mobile wireless service providers allow customers of one mobile wireless provider to automatically receive service from another provider’s network when they are in areas that their provider’s network does not cover.”¹⁸ The

¹³ See *Fifteenth Wireless Competition Report* at ¶ 238.

¹⁴ See Appendix A, Consumer Reports, *Cell Phone Handset Interoperability Poll* (April 12, 2011).

¹⁵ See *id.*

¹⁶ See *id.*

¹⁷ *Fourteenth Wireless Competition Report* at ¶ 229. See also, *id.* at ¶ 124; *Fifteenth Wireless Competition Report* at ¶ 125.

¹⁸ *Fifteenth Wireless Competition Report* at ¶ 125.

Commission has recognized the importance of roaming “for mobile wireless providers in areas where they do not have network coverage.”¹⁹

To promote competition and choice, the Commission recently required “all facilities-based providers of commercial mobile data services to offer data roaming arrangements to other such providers on commercially reasonable terms and conditions.”²⁰ However, the Commission determined that “it is reasonable for a provider *not* to offer a data roaming arrangement to a requesting provider that is not *technologically compatible*” and “it is reasonable for a provider *not* to offer a data roaming arrangement where it is not *technically feasible* to provide roaming for the particular data service for which roaming is requested”²¹ These exemptions could effectively eliminate the ability of LTE consumers to roam on other carriers’ networks in the absence of interoperability in the 700 MHz Band.

The Data Roaming Order necessitates the availability of devices that operate across the Lower Band as a technical prerequisite to negotiating roaming agreements. While the LTE standard does allow for technological compatibility, balkanization of the band would allow carriers like AT&T and Verizon Wireless to refuse to negotiate roaming agreements based on technical incompatibility. Thus, despite the adoption of a common LTE standard, the wireless market will move from limitations on interoperability that stem from technical incompatibility (the air interface technology) to limitations on interoperability that are entirely self-inflicted (proprietary and/or unnecessarily fragmented band classifications).

¹⁹ *Id.* at ¶ 126.

²⁰ In the Matter of Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers and Other Providers of Mobile Data Services, *Second Report and Order*, 26 FCC Rcd 5411 at ¶ 43 (2011) (“Data Roaming Order”).

²¹ *Id.* (emphasis added).

C. Interoperability Will Promote Market Entry.

In considering the competitiveness of the wireless market, the Commission has noted that entry and exit “conditions are relevant for determining *if* actual entry or exit will occur, and *when* actual entry or exit will occur – both of which are important for ensuring competition in the marketplace.”²² One major cost of entry is the ability to offer “customers a portfolio of attractive wireless devices.”²³ Importantly, the availability of devices “directly affect[s] the quality of a consumer’s mobile wireless experience, and, hence, they factor into a consumer’s choice of a wireless provider. Depending on the market strategy of the entrant, its portfolio of handsets and devices may be a significant non-price factor affecting its ability to compete for customers.”²⁴

The balkanization of the Lower Band also will create significant barriers of entry into the market for competitive providers – in most cases smaller and rural providers. Without interoperability, these providers may not be able to secure the newest, most efficient and attractive devices to work on their networks, putting them either at a competitive disadvantage or preventing market entry altogether. Similarly, interoperability could help to promote more robust and innovative adjacent markets for the actual devices and features. Device makers could more easily aggregate economies of scale for innovative new devices and applications without being dependent on carriage by a dominant national carrier.

The inability to obtain devices to compete effectively would have a particularly adverse impact on rural broadband deployment. As the Commission noted in the *NPRM*, interoperability in the 700 MHz band would promote build-out, particularly in rural areas. Yet, since most rural

²² *Fifteenth Wireless Competition Report* at ¶ 55.

²³ *Id.* at ¶ 60.

²⁴ *Id.* at ¶ 65.

licensees of the 700 MHz band have been granted licenses in the lower 700 MHz A band, they would be affected especially adversely by the lack of interoperability.²⁵

D. Interoperability In The 700 MHz Band Will Advance The Openness Goals of the 700 MHz C Block.

When the Commission issued its rules for licensees in the 700 MHz band, it described a number of public interest goals it hoped to achieve. The Commission recognized that “the 700 MHz spectrum provides an important opportunity to apply requirements for open platforms for devices and applications for the benefit of consumers.”²⁶ To achieve this goal of openness, the Commission required Upper 700 MHz C Block licensees “to allow customers, device manufacturers, third-party application developers, and others to use or develop the devices and applications of their choice, subject to certain conditions.”²⁷ Although the Commission did not adopt the openness conditions throughout the entire 700 MHz band, interoperability in the 700 MHz bands will help to advance these important public interest goals.

Without interoperability, consumers would effectively be constrained in their choice and use of devices. Limiting consumer access to different bands by designing equipment that only works with Band Class 17 directly constrains consumer choice of devices. A device that could

²⁵ See *NPRM* at ¶ 22.

²⁶ In the Matter of Service Rules for the 698-746, 747-762 and 777-792 MHz Bands; Revision of the Commission’s Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems; Section 68.4(a) of the Commission’s Rules Governing Hearing Aid-Compatible Telephones; Biennial Regulatory Review – Amendment of Parts 1, 22, 24, 27, and 90 to Streamline and Harmonize Various Rules Affecting Wireless Radio Services, Former Nextel Communications, Inc. Upper 700 MHz Guard Band Licenses and Revisions to Part 27 of the Commission’s Rules; Implementing a National wide, Broadband, Interoperable Public Safety Network in the 700 MHz Band; Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State, and Local Public Safety Communications Requirements Through the Year 2010; Declaratory Ruling on Reporting Requirement under Commission’s Part 1 Anti- Collusion Rule, *Second Report and Order*, 22 FCC Rcd 15289 at ¶ 195 (2007) (“C Block Order”).

²⁷ *Id.* at ¶ 195.

be designed to move freely between multiple bands within the 700 MHz spectrum could instead be limited to one, or even a subset of one, band. In particular, this would have the same practical effect in the marketplace as the device “locking” and “blocking” tactics that the Commission sought to avoid with the C Block license conditions.²⁸

Moreover, any possibility of the C Block openness rules compelling “providers in other 700 MHz Band blocks and other bands”²⁹ to “offer similar choices”³⁰ to those in the C Block will be greatly diminished if Lower Band licensees must first convince manufacturers to incorporate a different chipset into Band 17 devices.³¹ The Commission expected that open access to the entire Upper 700 MHz C Block could “provide sufficient potential market penetration to attract investment and achieve economies of scale in the equipment marketplace.”³² The possibility of attaining the same economies of scale in the Lower Band that the Commission expected in granting open access to the entire Upper 700 MHz C Block will be difficult to achieve since fragmenting the 700 MHz chipset market directly undermines that goal. With a unified chipset, device manufacturers will be able to develop a single device to work with the entire Lower Band, allowing manufacturers to rapidly achieve economies of scale and access a wide array of potential purchasers.

II. INTEROPERABILITY IN THE ENTIRE 700 MHZ BAND WILL PROMOTE PUBLIC SAFETY

While the Commission’s focus in this proceeding is on the Lower Band, interoperability for the entire 700 MHz band has profound potential consequences for public safety in light of the

²⁸ See *id.* at ¶ 201.

²⁹ *Id.* at ¶ 205.

³⁰ *Id.*

³¹ Given the tremendous leverage of the two dominant carriers – Verizon Wireless and AT&T – over device makers, a decision to incorporate a different chipset could likely be dictated by the anti-competitive self-interest of the dominant carriers.

³² C Block Order at ¶ 204.

recently passed Middle Class Tax Relief and Job Creation Act. Title VI of the Tax Relief Act reallocates the D Block in the upper band to public safety³³ and contemplates that this allocation will extract maximum utility for public safety by leveraging existing commercial wireless infrastructure.³⁴ The Act also requires that devices that operate in the D block “promote competition in the equipment market”³⁵ by requiring that equipment for the network be built to “open, non-proprietary standards”³⁶ that “enable use by any public safety entity and multiple vendors”³⁷ and are “backward-compatible with existing commercial networks to the extent that such capabilities are necessary and technically and economically feasible.”³⁸ By leveraging this infrastructure, the public safety community could benefit from newer and better devices likely to be built to serve the customers of the largest carriers occupying the neighboring bands.

Furthermore, FirstNet, the First Responder Network, is required to enter into roaming agreements with commercial providers to ensure nationwide coverage,³⁹ and the nature of any interoperability requirement for commercial users has a profound impact on the ability of FirstNet and the Commission to meet the roaming obligations of the Act. For example, since the D Block and public safety block are both in the upper 700 MHz band, expanding the universe of commercial providers capable of roaming within the 700 MHz spectrum will facilitate the negotiation of roaming agreements, enhance lease revenues, and enhance FirstNet’s capability to leverage commercial infrastructure. The ability to roam on the entire 700 MHz band combined with open standards for devices will also generally lower the cost of equipment and enhance the

³³ See Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, §6101(a), 126 Stat. 156, 204-205 (2012).

³⁴ See *id.* at §6206(1)(C).

³⁵ *Id.* at 6206(b)(2)(B).

³⁶ *Id.* at 6206(b)(2)(B)(i).

³⁷ *Id.* at 6206(b)(2)(B)(ii).

³⁸ *Id.* at 6206(b)(2)(B)(iii).

³⁹ See *id.* at 6206(c)(5).

ability to develop equipment that will “promote competition in the equipment market” and the adoption of open, non-proprietary standards.

III. INTEROPERABILITY SHOULD NOT EFFECT HANDSET DESIGN AND PRICE

It is evident that interoperability will enhance competition and consumer choice. Nonetheless, AT&T has argued that requiring interoperable devices that address interference issues for the Lower Band will adversely affect device “form, factor, cost, and battery life.”⁴⁰ However, the preponderance of evidence filed on this issue suggests that interoperability will not affect the ability of manufacturers to develop viable handsets for the Lower Band and could lower prices for consumers.⁴¹

Prior to the 700 MHz auction, “the industry standards process had left every indication that the Lower A, B, and C blocks would be grouped in Band 12 and that winners of the A block licenses would be in an economically and technically viable ecosystem in which devices (at that point using 3G UMTS technology) would work on all three spectrum blocks.”⁴² Indeed, in February 2008, based on a proposal by Ericsson, the 3GPP body agreed to consider defining the specifications for LTE as Band 12, which would include the Lower Band A, B, and C blocks in a single band.⁴³ Since there was an initial agreement, and an expectation, that LTE device specifications would cover the entire Band 12, it is reasonable to conclude that an interoperability requirement will not adversely affect the design and performance of mobile devices.

⁴⁰ *NPRM* at ¶ 45.

⁴¹ See Vulcan Wireless LLC, Notice of *Ex Parte* Presentations, WT Docket No. 11-18, RM-11592 (Dec. 6, 2011 and Dec. 14, 2011) (“Vulcan *Ex Parte*”); Cramton Report at 1.

⁴² Vulcan *Ex Parte* at 4.

⁴³ See *id.* at 4.

Additionally, AT&T itself appeared to admit that interference concerns should not affect the ability to deliver attractive interoperable devices. In announcing a partnership with Harris to offer LTE products to the public safety sector, AT&T touted roaming and nationwide interoperability on AT&T's 4G network when outside the public-safety network coverage area.⁴⁴ AT&T dismissed interference concerns based on the location of AT&T's 700 MHz spectrum in relation to the public safety spectrum. According to Mobeen Khan, executive director for AT&T's advanced mobility solutions, "Multi-frequency and multiprotocol devices have been working in the market for a long period of time[.] ... With the processing speeds and the radio capabilities, that's really a problem that's been solved ... so that's really not an issue."⁴⁵

Not only is there evidence that interoperability likely will not affect device design, it is also likely that interoperability may help to reduce consumer cost. The best way to ensure a variety of low-cost devices is to leverage economies of scale, which can be accomplished through interoperability.⁴⁶ Moreover, "[i]nteroperability assures end users of vigorous competition among vendors of network products and services, which will tend to reduce prices to consumers as well as the profitability of vendors. ... [Therefore,] consumer end users may have a strong interest in the development and implementation of IT standards that guarantee interoperability."⁴⁷

⁴⁴ See Radio Resource Media Group, *AT&T and Harris Form Alliance for LTE Public-Safety Technology* (Oct. 24, 2011) at http://www.rrmediagroup.com/newsArticle.cfm?news_id=7598.

⁴⁵ Donny Jackson, *Harris-AT&T Alliance Continues Partnership Trend* (Oct. 27, 2011) at http://urgentcomm.com/networks_and_systems/commentary/harris-att-continue-partner-trend-20111027.

⁴⁶ See Crampton Paper at 1.

⁴⁷ Jane K. Win, *Information Technology Standards as a Form of Consumer Protection Law*, Consumer Protection in the Age of the "Information Economy 99-117 (2006) at http://www.law.washington.edu/Directory/docs/Winn/Info_Tech_Stds.pdf.

IV. THE COMMISSION MUST INTERVENE SWIFTLY TO PROMOTE INTEROPERABILITY

The *NPRM* suggests that “an industry solution to the question of interoperability in the Lower 700 MHz band would be preferable because such a solution allows the market greater flexibility in responding to evolving consumer needs and dynamic and fast-paced technological developments.”⁴⁸ However, this voluntary approach has thus far failed to yield a result that ensures interoperability and benefits consumers. It is the Commission’s responsibility to protect the public interest, and it should no longer wait for the industry to deliver interoperability to consumers. Thus, the Commission must now use its ample legal authority to mandate interoperability and compliance.

A. Interoperability Will Not Result From Voluntary Actions of Wireless Market Actors.

The structure of the current wireless market demonstrates that device makers do not have sufficient incentives or leverage to design devices that are suitable for use across the entire 700 MHz band or even the Lower Band. The market dominance of the two largest wireless carriers, AT&T and Verizon Wireless, allows them to dictate the design of devices including the technical specifications for the bands on which the devices may operate. The economies of scale that device makers can achieve by catering to these two carriers will leave device makers with no incentive to serve the smaller licensees of the Lower A, B, and C Blocks.

Indication of this market structure is evident in how the largest wireless carriers, AT&T and Verizon Wireless, have used their market dominance in the past to control the design of devices. For example, AT&T secured an exclusive contract with Apple for the iPhone in 2007

⁴⁸ *NPRM* at ¶ 49.

and maintained this exclusivity until 2011.⁴⁹ To obtain carriage of the iPhone on the wireless network, Apple had to negotiate over the iPhone's features with AT&T.⁵⁰ Verizon Wireless similarly sought to control the design of the iPhone and originally rejected the iPhone because Apple wanted too much control over its design.⁵¹

AT&T and Verizon Wireless can continue to use their market dominance to influence device manufacturers, and this market dominance of the two largest carriers in the 700 MHz band is unlikely to be impacted by Verizon Wireless' transaction with SpectrumCo and Cox. In that transaction, Verizon Wireless seeks to purchase AWS spectrum licenses from SpectrumCo, a joint venture among Comcast Corporation, Time Warner Cable Inc., and Bright House. Also, cable provider Cox has agreed to sell off its spectrum to Verizon Wireless.⁵² In the context of that proceeding, Verizon has offered to sell its lower 700 MHz A and B block licenses in a private auction if the Commission approves its application for the transfer of SpectrumCo's and Cox's licenses. However, even if such a sale were to happen, the market dominance of the nation's top two wireless carriers in the 700 MHz band would not be affected.

⁴⁹ See Brad Tuttle, *The iPhone Monopoly is Over. Now Bring on the Smart Phone Price War Already!*, Time Moneyland, (January 12, 2011) at <http://moneyland.time.com/2011/01/12/the-iphone-monopoly-is-over-now-bring-on-the-smartphone-price-war-already/>.

⁵⁰ See Fred Vogelstein, *Bad Connection: Inside the iPhone Network Meltdown*, WIRED (July 19, 2010) at http://www.wired.com/magazine/2010/07/ff_att_fail/all/1.

⁵¹ See Leslie Cauley, *Verizon rejected Apple iPhone deal*, USA TODAY (Jan. 29, 2007) at http://www.usatoday.com/tech/news/2007-01-28-verizon-iphone_x.htm. See also, Tim Wu, *Wireless Net Neutrality: Cellular Carterphone and Consumer Choice in Mobile Broadband*, (February 15, 2007) at http://www.newamerica.net/publications/policy/wireless_net_neutrality.

⁵² In addition to the license transfer, Verizon Wireless and the Cable Companies have entered into joint marketing agreements. These joint marketing agreements allow each individual cable company and Verizon Wireless to sell one another's products.

Moreover, many have predicted that if an auction occurs, AT&T likely would win the licenses, thereby strengthening its already dominant position.⁵³ Even if AT&T did not win the licenses at auction, and instead the lower 700 MHz A and B blocks were to go to smaller, competitive carriers, the position of these competitive, smaller carriers compared to AT&T and Verizon Wireless would remain unchanged. For instance, Verizon Wireless' lower 700 MHz A and B block licenses are local or regional licenses and would not permit smaller carriers to compete with the nationwide carriers. On the other hand, Verizon Wireless' position in the market would be strengthened by the acquisition of the AWS spectrum, thereby strengthening its market dominance and exacerbating the trend of consolidation in the wireless market.

Given this market structure, wireless carriers may not voluntarily approve devices that operate across the entire 700 MHz band or even operate on Band Class 12. Furthermore, without economies of scale, which the smaller holders of the Lower A, B, and C Block licenses cannot offer, device manufacturers will not "volunteer" or have the incentive to build interoperable devices for the Lower Band. Therefore, the Commission must impose first an interoperability requirement on licensees of the Lower Band - and continue to consider imposing such requirements on all licensees across 700 MHz band.

B. The Commission Has the Legal Authority to Require the Use of Interoperable Devices.

The Commission has several sources of authority to ensure the availability of interoperable devices across the 700 MHz band. For instance, the Commission can use its direct

⁵³ See Harold Feld, *Verizon/Spectrum Co Spectrum Gap v. Spectrum Crunch- Verizon's Brilliant Aikido Move (Part II)*, (April 23, 2012) at <http://tales-of-the-sausage-factory.wetmachine.com/verizonspectrumco-spectrum-gap-v-spectrum-crunch-verizons-brilliant-aikido-move-part-ii>; Kevin Fitchard, *Verizon Unloading LTE Spectrum; AT&T Open Your Wallet*, Giga Om, (April 18, 2012) at <http://gigaom.com/broadband/verizon-unloading-lte-spectrum-att-open-your-wallet/>.

Title III authority to regulate “radio communications” and “transmission of energy by radio.”⁵⁴ Indeed, the Courts have long recognized that as the expert agency, the Commission has broad discretion to manage the use of this public resource.⁵⁵ Moreover, the Commission could use its Section 201(b) authority to ensure that wireless carriers are not unreasonably restricting the interoperability of devices across the 700 MHz band.

1. Title III

Under Title III of the Communications Act, the Commission has several sources of direct authority to require the use of interoperable devices. For example, the Commission has broad discretion to impose or modify conditions on any spectrum license that benefits the public interest.⁵⁶ Section 316 specifically provides that “any station license ... may be modified by the Commission...if in the judgment of the Commission such action will promote the public interest, convenience, and necessity....”⁵⁷

These provisions give the Commission specific authority to modify licenses and implement license restrictions that are in the public interest. As discussed above, interoperability is in the public interest because it benefits consumers and promotes competition in the wireless marketplace. To achieve this benefit, wireless carriers must offer and design devices that will operate in the entire 700 MHz band. Thus, the Commission can either use its authority to require

⁵⁴ 47 U.S.C. § 301.

⁵⁵ See *Mobile Relay Associates v. FCC*, 457 F.3d 1 (D.C. Cir. 2006) (where the Commission is “fostering innovative methods of adopting spectrum” it “functions as a policy maker” and is to be “accorded the greatest deference”); *NCTA v. Gulf Power*, 534 U.S. 327 (2002); *In Re Nextwave*, 200 F.3d 43 (2d. Cir. 1999) (the Commission’s exclusive jurisdiction over spectrum management extends not only to granting the license but to the “conditions that may be placed on their use”); *Telocator Network of America v. FCC*, 691 F. 2d 525 (D.C. Cir. 1982).

⁵⁶ 47 U.S.C. §§ 303(r), 316(a)(1).

⁵⁷ *Id.* § 316(a).

interoperability as it prescribes “the nature of service to be rendered by” licensees⁵⁸ or modify the existing licenses by requiring the licensees of the 700 MHz band to employ interoperable devices across the Lower Band.⁵⁹

2. *Section 201(b)*

Section 201(b) states that all common carrier “practices... for and in connection with such communication service, shall be just and reasonable.”⁶⁰ Under this provision, as incorporated through section 332(c), the Commission may prohibit unreasonable constraints by wireless carriers, especially when those constraints create an artificial restriction on the market for communications services by preventing other carriers from roaming and obtaining attractive devices to offer consumers. Specifically, in the case of the Lower Band, the “practice” of implementing a proprietary band class which, as a subset of the interoperable Band Class 12, has the direct effect of creating an artificial restriction on the ability of both A block competitors and their customers to roam and acquire comparable devices and applications.

Thus, the Commission has the statutory authority to prohibit an unreasonable practice in the offering of a common carrier wireless service by requiring the use of interoperable devices by wireless carriers.

3. *The Carriers’ Own Arguments Acknowledge the Commission’s Authority to Regulate Devices*

Finally, the carriers’ own arguments in other proceedings before the Commission support the Commission’s authority over devices operating in wireless bands. For instance, in the

⁵⁸ *Id.* § 303(b).

⁵⁹ *Id.* § 316(a).

⁶⁰ 47 U.S.C. § 201(b).

Commission's proceeding to develop and deploy signal boosters,⁶¹ the Commission is considering whether it can license wireless boosters by rule under section 307(e), so that consumers can purchase boosters independently of wireless carriers.

AT&T has opposed the proposal, arguing that the operation of boosters requires licensee consent. AT&T stated that individual users of wireless devices can operate their devices without a license because these users "are authorized under the carrier's license and subject to the carrier's operational control."⁶² If the carrier's license is extended to their customers with respect to signal boosters, the same principle holds true in this proceeding. In other words, if the carrier's license extends to a customer's use of devices, and carriers are subject to the Commission's authority, it follows that the Commission then has the authority to require standardized customer equipment.

V. CONCLUSION

For the foregoing reasons, Consumers Union, Public Knowledge, New America Foundation, and Free Press urge the Commission to adopt rules requiring that devices be interoperable across the Lower 700 MHz Band. Further, we urge the Commission not to prejudice the possibility of interoperability in the entire 700 MHz band at a future date. Commission action will ensure that a competitive market can evolve and provide consumers with more choices for wireless services and devices.

⁶¹ In the Matter of Amendment of Parts 1, 2, 22, 24, 27, 90 and 95 of the Commission's Rules to Improve Wireless Coverage Through the Use of Signal Boosters, *Notice of Proposed Rulemaking*, 26 FCC Rcd 5490 (2011).

⁶² Comments of AT&T, *Petitions Regarding Use of Signal Boosters and Other Signal Amplification Techniques Use With Wireless Services*, 10, WT Docket No. 10-4 (February 5, 2010).

Respectfully Submitted,

A handwritten signature in dark ink, appearing to read "Parul P. Desai". The signature is fluid and cursive, with the first name "Parul" being more prominent.

Parul P. Desai,
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June 1, 2012

APPENDIX A



Final Report

Cell Phone Handset Interoperability Poll

Appendix: Questionnaire

April 12, 2011

NRC #2011.40

Consumer Reports National Research Center

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Methodology

- Telephone surveys were conducted among 1,254 random adults (1,003 landline telephone and 251 cell phone) comprising 637 men and 617 women 18 years of age and older. The analysis is based on the 981 adults who said they own a cell phone. Interviewing took place over April 7-10, 2011.
- The questionnaire was fielded via Opinion Research Corporation's Caravan twice-weekly national telephone omnibus survey. ORC used random digit dialing to achieve two nationally representative probability samples and weighted completed interviews by age, education, geographic region, race and sex.
- Banner legend
 - ✓ *Smart Phone*: Cell phone is a Blackberry, Droid/Android-based phone, iPhone, Palm, or Windows/Microsoft-based phone.
- The results of this study are intended for external communications. Methodology statement for public release:

The Consumer Reports National Research Center conducted a telephone survey using two nationally representative probability samples: landline telephone households and cell phones. 981 interviews were completed among adults aged 18+ who own a cell phone. Interviewing took place over April 7-10, 2011. The sampling error is +/- 3.2 percentage points at a 95% confidence level.



Executive Summary

- Consumers expressed a strong desire to keep their existing handset when moving from one carrier to the next. Considering those with a long-term contract for cell phone service:
 - ✓ Nearly 6 in 10 (59%) would like to be able to keep their equipment if they were to change service providers, including 69% of those with a smart phone.
 - ✓ Virtually all (97%) felt that consumers should be able to keep their existing handsets when changing carrier.
 - ✓ Most (88%) said that their handset should work on any cellular network.
 - ✓ Nearly three-quarters (73%) said they would *strongly support* or *support* a government rule that requires handsets to be compatible with all U.S. cellular services. This view was supported most strongly by smart phone owners (81%).
 - ✓ As the penetration of smart phones inevitably grows, the demand for interoperability will increase.



Cell Phone Ownership

- Overall, 8 in 10 (82%) of consumers own a cell phone.
 - ✓ The rate of ownership was greatest among those earning at least \$75,000 per year and consumers under age 55.
- Among those with a cell phone, one-third (32%) own more than one handset.

M1 - Do you have a cell phone that you personally own?

Base: All Respondents

Base: All Respondents													
UNWEIGHTED BASE	TOTAL	Gender		Age			Household Income			Region			
		Men	Women	18-34	35-54	55+	<\$40K	\$40-74K	\$75K+	NEast	Midwest	South	West
	1,254	637	617	216	433	597	371	311	313	241	282	451	280
	%	%	%	%	%	%	%	%	%	%	%	%	%
Yes	82	84	80	85	87	73	74	84	93	84	76	82	85
No	18	16	20	15	13	27	26	16	7	16	24	18	15

M2 - Do you own more than one cell phone?

Base: Own a Cell Phone

Base: Own a car/truck													
	TOTAL	Gender		Age			Household Income			Region			
		Men	Women	18-34	35-54	55+	<\$40K	\$40-74K	\$75K+	NEast	Midwest	South	West
UNWEIGHTED BASE	981	504	477	176	367	431	240	250	283	192	209	356	224
	%	%	%	%	%	%	%	%	%	%	%	%	%
Yes	32	33	30	23	43	25	24	35	41	29	36	30	32
No	68	67	70	77	57	75	76	65	59	71	63	70	68
Don't know	0	0	-	-	0	0	0	-	-	0	0	-	-



Type of Cell Phone

Base: Own a Cell Phone

- More than one-third of cell phone owners had a smart phone. The most popular smart phones are Android-based models, used by 14% of cell phone owners. iPhone (11%) and BlackBerry (8%) trailed in popularity. Collectively, smart phone types accounted for 38%.
- The balance of cell phone owners (57%) said they have another type of cell phone, presumably a feature phone.

M3 - Thinking of the cell phone that you use most often, what type of phone is it?

Base: Own a Cell Phone

	TOTAL	Gender		Age			Household Income			Region			
		Men	Women	18-34	35-54	55+	<\$40K	\$40-74K	\$75K+	NEast	Midwest	South	West
UNWEIGHTED BASE	981	504	477	176	367	431	240	250	283	192	209	356	224
	%	%	%	%	%	%	%	%	%	%	%	%	%
Smart Phone (Net)	38	41	34	57	37	17	31	40	51	38	36	33	45
Droid or Android-based phone	14	18	11	22	16	5	14	16	19	13	12	11	22
iPhone	11	11	12	18	11	4	9	12	16	15	10	8	15
BlackBerry	8	7	9	13	8	4	4	9	13	6	8	11	7
Palm	3	3	2	4	2	2	4	3	2	2	5	3	0
Windows or Microsoft-based phone	1	1	0	1	1	1	0	-	2	2	-	0	1
Another type of cell phone	57	55	60	42	58	73	63	54	45	58	58	60	52
Don't know	5	4	6	1	5	10	5	6	4	4	7	6	3



Cell Phone Carrier

Base: Own a Cell Phone

- The top four cell phone carriers comprise 80% of the market. The two leading providers are Verizon Wireless (34%) and AT&T (25%), while 1 in 10 consumers use Sprint (11%) or T-Mobile (10%). Remaining providers account for no more than 4%.
- Choice of provider was flat among men and women, but we observed several differences across age groups.
 - ✓ Verizon Wireless skewed heavily toward consumers aged 55+ years.
 - ✓ Those under age 55 were more likely to use Sprint than older consumers.
 - ✓ T-Mobile had the greatest penetration with the youngest age group, age 18-34.
 - ✓ Tracfone, a month-to-month service, was used disproportionately by older consumers.

M4 - Still thinking about the cell phone that you use most often, which carrier provides the service?

Base: Own a Cell Phone

	TOTAL	Gender		Age			Household Income			Region				Smart Phone
		Men	Women	18-34	35-54	55+	<\$40K	\$40-74K	\$75K+	NEast	Midwest	South	West	
UNWEIGHTED BASE	981 %	504 %	477 %	176 %	367 %	431 %	240 %	250 %	283 %	192 %	209 %	356 %	224 %	317 %
Verizon Wireless	34	33	34	31	32	41	22	41	40	41	36	27	37	29
AT&T	25	25	26	26	27	22	24	25	27	20	23	27	28	31
Sprint	11	11	11	12	12	8	10	10	10	6	10	16	7	15
T-Mobile	10	10	10	16	8	6	13	7	11	10	5	9	16	16
Tracfone	4	4	5	2	4	8	8	4	2	7	6	4	1	0
Boost Mobile	2	2	2	3	2	-	5	-	-	4	2	2	1	1
U.S. Cellular	2	2	1	0	2	3	3	1	2	2	4	1	0	1
Virgin Mobile	2	2	1	1	3	1	2	2	1	4	2	2	0	1
Metro PCS	1	1	1	3	-	1	2	1	-	0	-	2	1	1
Alltel	1	1	0	-	1	1	1	0	1	-	2	0	0	0
Cellular One	0	-	0	-	-	0	0	-	-	-	-	0	-	-
Other	7	6	7	6	8	5	9	7	5	4	9	7	7	5
Don't know	1	2	1	0	1	4	1	1	0	1	1	2	1	2



Month-to-Month vs. Long-Term Contract

Base: Own a Cell Phone

- One-quarter (25%) of cell phone owners purchase minutes month to month.
- Prepaid phones were most common among:
 - ✓ Household income under \$40,000 (40%)
 - ✓ Age 55+ years (35%)
 - ✓ Men (30%)

M5 - Is your service prepaid, where you purchase minutes month to month with no long-term contract?

Base: Own a Cell Phone

	Gender			Age			Household Income			Region			
	TOTAL	Men	Women	18-34	35-54	55+	<\$40K	\$40-74K	\$75K+	NEast	Midwest	South	West
UNWEIGHTED BASE	981	504	477	176	367	431	240	250	283	192	209	356	224
	%	%	%	%	%	%	%	%	%	%	%	%	%
Yes	25	30	21	18	24	35	40	20	14	29	34	29	10
No	72	68	77	81	74	60	58	80	84	69	64	69	87
Don't know	2	2	2	0	1	4	2	1	2	2	3	1	2
Refused	0	1	0	-	1	0	-	-	0	-	0	1	0



Want to Keep Handset

Base: Own a Cell Phone AND Have Long-Term Contract

- A strong majority (59%) of cell phone users who have a long-term contract would like to be able to take their existing handset to another provider if they were to change service carriers.
- Those most desirous of keeping their phones in the event of changing services were smart phone owners (69%).

M6 - If you were to change cell phone services, would you like to be able to keep this phone and activate it on the new service?

Base: Own a Cell Phone AND Have Long-Term Contract

Base: Own a Cell Phone AND have Long-Term Contract														
	TOTAL	Gender		Age			Household Income			Region				Smart Phone
		Men	Women	18-34	35-54	55+	<\$40K	\$40-74K	\$75K+	NEast	Midwest	South	West	
UNWEIGHTED BASE	709	364	345	142	280	280	141	184	232	141	141	245	182	274
	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Yes	59	56	62	64	56	58	55	61	60	59	57	60	59	69
No	34	38	31	32	38	33	40	33	36	34	34	34	36	26
Don't know	6	6	6	5	7	8	5	5	4	6	9	6	5	6
Refused	0	-	0	-	-	1	-	-	0	1	-	-	-	-



Should Be Able to Keep Handset

Base: Own a Cell Phone AND Have Long-Term Contract

- Virtually all (96%) of long-term service contract holders felt that consumers should be able to keep their existing handsets when they change cell phone service providers.
- All segments expressed very strong support for the ability to take the existing handset to another carrier.

M7 - Do you feel that consumers should be able to keep their current phones if they like when they change cell phone services?

Base: Own a Cell Phone AND Have Long-Term Contract

	TOTAL	Gender		Age			Household Income			Region				Smart Phone
		Men	Women	18-34	35-54	55+	<\$40K	\$40-74K	\$75K+	NEast	Midwest	South	West	
UNWEIGHTED BASE	709	364	345	142	280	280	141	184	232	141	141	245	182	274
	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Yes	96	96	96	99	95	94	96	96	98	98	97	96	95	98
No	2	2	3	1	3	4	3	3	1	0	2	3	3	1
Don't know	1	1	1	-	2	2	1	1	1	2	1	0	2	1
Refused	0	0	-	-	0	-	0	-	-	-	-	-	1	-



Handset Should Work Anywhere

Base: Own a Cell Phone AND Have Long-Term Contract

- Nearly 9 in 10 (88%) of long-term contract holders said that their handset should work on any cellular network.
 - ✓ Support was highest among those aged 18-34 (94%).

M8 - Right now, when you choose a cell phone through your cellular service provider you are locked into using the phone with that carrier. Do you feel that the cell phone you acquire should work on any cellular provider's network you choose?

Base: Own a Cell Phone AND Have Long-Term Contract

	TOTAL	Gender		Age			Household Income			Region				Smart Phone
		Men	Women	18-34	35-54	55+	<\$40K	\$40-74K	\$75K+	NEast	Midwest	South	West	
UNWEIGHTED BASE	709	364	345	142	280	280	141	184	232	141	141	245	182	274
	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Yes	88	87	89	94	87	81	88	89	89	89	82	92	86	90
No	10	10	9	6	10	14	9	9	9	8	16	7	10	9
Don't know	2	3	2	-	3	5	3	2	2	3	2	1	3	1
Refused	0	0	0	-	-	1	0	0	-	-	-	0	1	0



Support for Rule Ensuring Compatibility

Base: Own a Cell Phone AND Have Long-Term Contract

- Nearly three-quarters (73%) of cell phone users with a long-term contract said they would *strongly support* or *support* a government rule that requires handsets to be compatible with all U.S. cellular services.
- Support was most enthusiastic among consumers aged 18-34 years (83%) and smart phone owners (81%).

M9 - Would you support a government rule that will insure that the cell phone you purchase is compatible with all U.S. cellular services? How would you describe your support for this rule? Would you...

Base: Own a Cell Phone AND Have Long-Term Contract

		Gender		Age			Household Income			Region				Smart Phone
	TOTAL	Men	Women	18-34	35-54	55+	<\$40K	\$40-74K	\$75K+	NEast	Midwest	South	West	Phone
UNWEIGHTED BASE	709	364	345	142	280	280	141	184	232	141	141	245	182	274
	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Strongly Support/Support (Net)	73	72	75	83	72	63	81	74	75	73	71	73	76	81
Strongly support	35	32	37	37	37	29	45	40	33	38	30	40	30	43
Support	39	40	38	47	35	34	36	33	42	34	41	33	47	38
Oppose	11	13	10	9	11	14	6	13	9	9	13	13	8	9
Strongly oppose	11	11	10	5	13	15	7	10	13	13	10	10	9	8
Oppose/Strongly Oppose (Net)	22	24	20	13	24	29	14	22	21	22	24	24	17	17
Don't know	4	4	4	3	4	7	4	4	3	5	4	3	6	2
Refused	1	0	1	-	1	1	1	-	-	-	1	0	1	-



Profile

- Men and women were about equally represented in the poll, and the median age of respondents was 44 years.
- Overall, 17% of participants reported having at least a four-year college degree, but 58% had no education beyond high school.
- Median household income of interviewed consumers was about \$51,000, and 41% said they are employed full time.
- Half of respondents (52%) said they are married, and three-quarters (72%) identified themselves as Caucasian.

Profile

Base: Own a Cell Phone

	TOTAL	Gender		Age			Household Income		
		Men	Women	18-34	35-54	55+	<\$40K	\$40-74K	\$75K+
UNWEIGHTED BASE	981	504	477	176	367	431	240	250	283
	%	%	%	%	%	%	%	%	%
GENDER									
Male	50	100	-	51	49	48	48	45	57
Female	50	-	100	49	51	52	52	55	43
AGE									
18-34	32	33	31	100	-	-	38	32	23
35-44	19	20	18	-	48	-	16	23	22
45-54	20	19	21	-	52	-	17	15	28
55-64	15	15	16	-	-	53	14	15	17
65+	13	13	14	-	-	47	15	16	9
Refused/Nr	1	1	1	-	-	-	-	-	-
MEDIAN (Years)	43.5	42.6	45.4	26.0	45.3	63.5	41.8	42.3	46.4
EDUCATION									
Some HS or less	11	13	8	10	10	12	22	9	2
HS graduate	30	31	30	32	28	32	36	32	19
Some college	28	24	32	37	25	22	28	31	25
College grad+ [Net]	30	30	29	21	34	32	14	28	54
College grad	17	17	17	14	19	17	11	17	29
Postgrad degree	13	13	12	8	15	15	2	11	25
Refused/Nr	1	2	1	0	2	1	0	-	0
HOUSEHOLD INCOME									
Under \$25,000	17	16	19	21	17	15	48	-	-
\$25,000 but less than \$50,000	27	27	28	32	20	32	52	30	-
\$50,000 but less than \$75,000	19	18	21	17	20	20	-	70	-
\$75,000 but less than \$100,000	11	12	11	8	13	12	-	-	42
\$100,000 or more	16	19	12	12	21	12	-	-	58
Refused	9	10	9	10	9	9	-	-	-
MEDIAN (000s)	\$50.9	\$54.1	\$48.7	\$43.6	\$61.2	\$49.2	\$26.0	\$57.1	\$113.8

Profile (cont.)

Base: Own a Cell Phone

	TOTAL	Gender		Age			Household Income		
		Men	Women	18-34	35-54	55+	<\$40K	\$40-74K	\$75K+
UNWEIGHTED BASE	981	504	477	176	367	431	240	250	283
	%	%	%	%	%	%	%	%	%
EMPLOYMENT									
Employed full time	41	43	39	44	53	23	30	49	52
Retired	15	15	14		3	48	17	17	11
Self-employed	11	15	8	5	15	13	9	9	16
Employed part time	10	7	12	17	8	6	13	8	10
Not currently employed	9	12	7	7	12	8	18	4	5
Student	8	6	10	23	1	0	10	6	3
Homemaker	5	0	9	4	7	3	3	7	4
Refused/Nr	1	2	1	0	2	0	1	0	-
MARITAL STATUS									
Married	52	51	53	29	66	59	32	54	80
Single and never been married	26	28	25	58	15	6	35	26	13
Divorced	9	9	9	1	11	15	15	10	2
Widowed	5	4	7	1	1	17	9	4	1
Living as married	5	5	4	10	3	1	7	4	2
Separated	1	1	2	-	3	1	2	2	1
Refused/Nr	1	1	1	2	1	1	-	-	-

Profile (cont.)

Base: Own a Cell Phone

	TOTAL	Gender		Age			Household Income		
		Men	Women	18-34	35-54	55+	<\$40K	\$40-74K	\$75K+
UNWEIGHTED BASE	981	504	477	176	367	431	240	250	283
	%	%	%	%	%	%	%	%	%
<u>SPANISH/HISPANIC/LATINO</u>									
Yes	14	16	13	24	12	7	17	20	14
No	84	83	85	75	86	93	83	80	86
Refused/Nr	2	2	2	1	2	1	0	-	-
<u>RACE*</u>									
White/Caucasian	72	69	76	62	74	83	71	72	80
Black/African-American	14	15	13	19	12	11	15	16	7
Asian/Asian-American	2	2	2	4	2	-	2	1	4
Some other race	13	15	11	21	12	6	14	17	10
Refused/Nr	3	3	3	2	3	2	0	0	1
*Multiple responses allowed									
<u>REGION</u>									
Northeast	19	21	17	22	19	15	23	18	17
Midwest	20	20	20	15	23	23	20	20	22
South	37	36	38	35	34	43	35	35	34
West	24	23	25	28	24	19	22	27	27



Appendix: Questionnaire

On another subject...

M1 Do you have a cell phone that you personally own?

01 YES

02 NO

IF OWN A CELL PHONE, M1 (01), CONTINUE. ALL OTHERS SKIP TO M10

M2 Do you own more than one cell phone?

01 YES

02 NO

99 DON'T KNOW

M3 Thinking of the cell phone that you use MOST OFTEN, what type of phone is it?
(READ ENTIRE LIST BEFORE RECORDING ONE ANSWER)
[RANDOMIZE 01-05]

01 iPhone

02 Droid or Android based phone

03 BlackBerry

04 Palm

05 Windows or Microsoft based phone

06 Or another type of cell phone

99 DON'T KNOW

M4 Still thinking about the cell phone that you use MOST OFTEN, which carrier provides the service?
(READ LIST. RECORD ONE ANSWER)
[RANDOMIZE]

01 Alltel

02 AT&T

03 Cellular One

04 Metro PCS

05 Sprint

06 T-Mobile

07 Tracfone

08 U.S. Cellular

09 Verizon Wireless

10 Virgin Mobile

11 Boost Mobile

95 OTHER (SPECIFY)

99 DON'T KNOW

M5 Is your service prepaid, where you purchase minutes month to month with no long term contract?

- 01 YES
- 02 NO
- 98 DON'T KNOW
- 99 REFUSED

M6 If you were to change cell phone services, would you like to be able to keep this phone and activate it on the new service?

- 01 YES
- 02 NO
- 98 DON'T KNOW
- 99 REFUSED

M7 Do you feel that consumers should be able to keep their current phones if they like when they change cell phone services?

- 01 YES
- 02 NO
- 98 DON'T KNOW
- 99 REFUSED

M8 Right now, when you choose a cell phone through your cellular service provider you are locked into using the phone with that carrier.

Do you feel that the cell phone you acquire should work on any cellular provider's network you choose?

- 01 YES
- 02 NO
- 98 DON'T KNOW
- 99 REFUSED

M9 Would you support a government rule that will insure that the cell phone you purchase is compatible with all U.S. cellular services? How would you describe your support for this rule? Would you...

(READ ENTIRE LIST BEFORE RECORDING ONE ANSWER)

- 01 Strongly support
- 02 Support
- 03 Oppose
- 04 Strongly oppose
- 98 DON'T KNOW
- 99 REFUSED